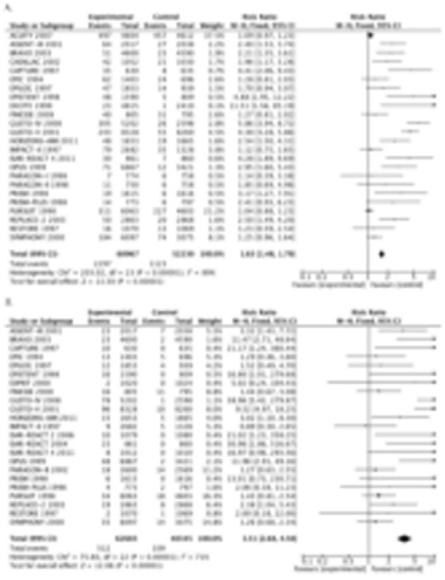
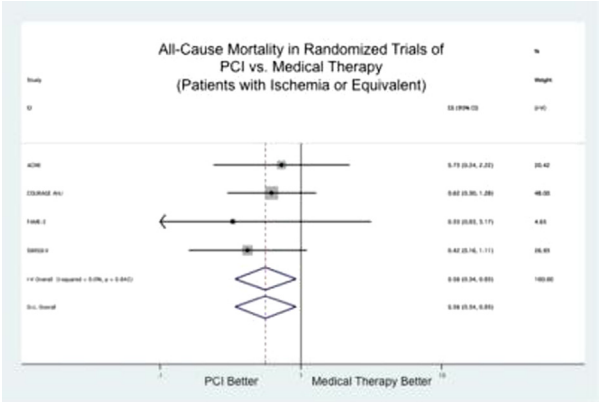


TCT-845

Percutaneous Coronary Intervention is Associated with Lower Mortality Compared with Optimal Medical Therapy in Patients with Stable Ischemic Heart Disease and Objective Evidence of Ischemia or Abnormal Fractional Flow Reserve: A Meta-Analysis of Randomized Controlled Trials

Ajay J. Kirtane[1], Hemal Gada[2], Sripal Bangalore[3], Dean Kereiakes[4], Gregg Stone[5]
[1]Columbia University / Cardiovascular Research Foundation, New York, NY, [2]Columbia University - Center for Interventional and Vascular Therapy, New York, NY, [3]New York University School of Medicine, New York, United States, [4]The Christ Hospital Heart & Vascular Center, Cincinnati, United States, [5]Columbia University Medical Center and the Cardiovascular Research Foundation, New York, United States

Background: Recent randomized controlled trials (RCTs) have called into question whether percutaneous coronary intervention (PCI) reduces death or myocardial infarction in patients with stable ischemic heart disease (SIHD). However, several of these trials randomized an unselected group of patients, including those with and without objective ischemia.
Methods: We performed a meta-analysis of RCTs comparing PCI with medical therapy (MT) in pts with either ischemia (identified on non-invasive testing) or abnormal fractional flow reserve (FFR), to determine whether PCI reduces all-cause mortality in this high-risk SIHD cohort.
Results: Four RCTs comparing PCI vs. MT in pts with objective ischemia (or FFR-equivalent) were found; these trials randomized a total of 1,769 pts with f/u from 7 months to 10 years. The point estimate of the hazard ratio (HR) for mortality following PCI vs. MT varied from 0.33-0.73, with no trial heterogeneity (I2=0%). Of note, the documented ischemia cohort of the COURAGE trial (Am Heart J 2012) comprised 48% of the weight of the included studies. Overall, 28/871 (3.2%) PCI pts died compared with 54/898 MT pts (6.0%), consistent with a significant reduction in all-cause mortality with PCI (HR 0.56; 95% confidence interval (CI): 0.34-0.93, p=0.02, Figure), which remained significant when 3 other ineligible RCTs were added which included a PCI vs MT arm (HR 0.61 [0.42,0.89], p=0.01).



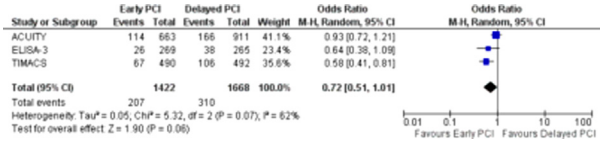
Conclusions: Despite conventional conclusions drawn from existing RCT data that PCI and MT result in comparable survival in SIHD, when analyses are restricted to pts with objective ischemia (or the FFR equivalent), PCI is associated with a significant and consistent 44% reduction in all-cause mortality compared with MT.

TCT-846

Early versus Delayed Percutaneous Coronary Intervention for High Risk patients with Non ST Elevation-Acute Coronary Syndrome: A Meta-analysis.

Naveen Rajpurohit[1], Colin Farritor[1], Muhammad Khan[2], Tom P. Stys[1], Marian Petrasko[1], Adam Stys[1]
[1]University of South Dakota, Sanford Heart Hospital, Sioux Falls, SD, [2]University of South Dakota, Sanford Heart hospital, Sioux Falls, SD

Background: Studies indicate no clear benefit of early percutaneous coronary intervention (PCI) (<24 hours) in non ST elevation acute coronary syndrome (NSTE-ACS) patients as compared to delayed PCI (>24 hours). However, high risk NSTE-ACS patients may benefit from early PCI. We pooled existing data and performed a meta-analysis.
Methods: Medline, PubMed and abstracts from major cardiology conferences were searched. Randomized control trials (RCTs) comparing the composite of death and/or myocardial infarctions (MI) and/or repeat revascularization within 6 months of early or delayed PCI for high risk patients with NSTE-ACS were included. High risk was defined as TIMI score >5 or GRACE score >140. The effects of both methods were analyzed by calculating pooled estimates for death, MI and repeat revascularization. Analyses were performed for the outcome by using odds ratio (OR) by random effects model. Heterogeneity among studies was assessed by calculating I'' measure of inconsistency.
Results: Three studies (ACUITY, ELISA-3 and TIMACS) with a total of 3090 patients met our inclusion criteria. The incidence of the composite of death and/or MI and/or repeat revascularization was not different between early PCI [207/1422 (14.5%)] as compared to delayed PCI [310/1668(18.6%)], (OR 0.72, 95% CI 0.51-1.01, P=0.06).



Conclusions: Coronary artery revascularization within 24 hours of presentation does not reduce composite of death and/or MI and/or repeat revascularization at 6 months in high risk NSTE-ACS as compared to intervention after 24 hours. More studies are needed on this subgroup of NSTE-ACS patients.

TCT-847

Strut Level Optical Coherence Tomography Evaluation of Coronary Stent Strut Coverage Temporal Trends: A Systematic Review

Kwan S. Lee[1], Justin Z. Lee[1], Irbaz B. Riaz[1], Muhammad Husnain[1], Haris Riaz[2], Kapil Lotun[1], Karl B. Kern[1]
[1]University of Arizona, Tucson, AZ, [2]Dow Medical College, Karachi, Sindh

Background: Delayed endothelial coverage of stent struts has been linked to late stent thrombosis, especially after drug-eluting stent implantation. The high-resolution capability of intravascular optical coherence tomography (OCT) enables visualization of strut coverage and has been used to quantify coverage at various time points post implantation. This has the potential application of predicting timing and safety of dual anti-platelet therapy discontinuation. We aim to summarize all known quantitative strut level analysis data of clinically implanted coronary stents in human subjects to date as evaluated by OCT.
Methods: A review of publications and online databases up to February 2013 retrieved 59 eligible articles and abstracts, 1843 initially identified studies. Data extracted for bare metal, (BMS), Sirolimus (SES), Paclitaxel (PES), Zotarolimus (ZES-E & ZES-R) and Everolimus eluting stent (EES) strut coverage and malapposition was compared between stents at various time intervals post implantation.
Results: 13 abstracts and 46 papers were included in the analysis with studies performed from 1 week to 5 years post implantation. 2,278 patients were studied, comprising 2,716 stents, 2,044 lesions and strut level data on 532,533 struts, where data was recorded.
Conclusions: Bare metal stents achieved a threshold of < 2.0% uncovered struts within 1 month of implantation, SES within 48 months, PES within 60 months, Endeavor ZES within 2.5 months and EES within 20 months. Resolute ZES have a 7.4% uncovered strut rate at 13 months post-implantation and lack data beyond this. OCT enables direct visualization and quantification of coronary stent delayed endothelial coverage at a strut level, providing insight into drug eluting stent-specific effects on the timing of neo-intimal healing. This may have a role in predicting drug-eluting-stent specific safety of dual-antiplatelet therapy cessation.

POSTERS

Stent Specific Temporal Pattern of Coverage and Malapposition as Detected by OCT

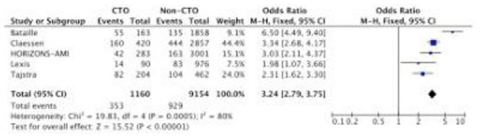
Stent		<1m	1m	2m	3-5m	6-8m	9-11m	12-15m	16-20m	21-30m	31-40m	41-50m	51-60m
BMS (%)	Unc	13.7	3.5		0.1	0.5	0.7	1.1	1.2			0.3	
	Mal	12.1	1.2		1.1	0.1		0.1	0.0			0.0	
PES (%)	Unc					4.9	4.8	4.8	6.5	3.1		10.8	1.0
	Mal					2.5	1.8	1.3	1.0			13.8	0.7
SES (%)	Unc				15.0	13.4	10.1	10.3	10.5	5.0	4.1	1.8	1.5
	Mal				15.5	3.0	2.8	3.6	3.0	4.3	0.3	3.9	1.2
ZES-E (%)	Unc	90.6	37.3	10.8	0.4	0.4	1.7	3.0	0.2	0.1			
	Mal	0.9	0.3	0.2	0.1	0.2	0.1	1.7	0.2				
ZES-R (%)	Unc				6.2	7.4		7.4					
	Mal				0.7	1.5		1.8					
EES	Unc		62.5	52.6	21.5	3.6	4.9	2.2	0.4				
	Mal		0.5	1.0	0.8	1.0	1.3	0.6	0.1				

TCT-848

Impact on Mortality of Non-Infarct Related Artery Coronary Chronic Total Occlusion in Patients Presenting With ST-Segment Elevation Myocardial Infarction: A Systematic Review and Meta-Analysis

Stephen O'Connor[1], Thomas Hovasse[2], Thierry Lefevre[1], Francesca Sanguineti[1], Carlos J. Garcia Alonso[3], Thierry Unterseeh[4], Marie-Claude Morice[1], Hakim Benamer[1], Philippe Garot[4], Yves Louvard[1]
[1]Institut Cardiovasculaire Paris Sud, Générale de Santé, Massy, France, [2]ICPS, Massy, France, [3]Institut Cardiovasculaire Paris Sud, Générale de Santé, Massy, Ile-de-France, [4]Institut Cardiovasculaire Paris Sud, Générale de Santé, Quincy, France

Background: To evaluate the impact of the presence of a chronic total occlusion (CTO) on short and long term mortality after primary percutaneous coronary intervention (PPCI).
Methods: We performed MEDLINE, Cochrane Controlled Trials Registry and EMBASE database searches for published articles using predefined terms. Studies that reported data on the incidence of all-cause mortality in STEMI patients with single- or multivessel disease (SVD, MVD) with and without CTO were included. Of the 189 studies identified, 5 articles met the inclusion criteria: 3 observational studies and 2 post-hoc analyses of randomized controlled trials (RCTs).
Results: A total of 10,314 patients were included in the meta-analysis with overall 1160 (11%) patients with CTO. The global analysis demonstrated that CTO was associated with an over 3-fold increased incidence of mortality at a median follow up of 36 months compared to patients non-CTO patients (30.4% vs 10.1% OR: 3.24; 95% confidence interval [CI]: 2.79 to 3.75; p 0.0001) (Figure). This finding was consistent in a sub-analysis of studies that reported 30-day follow up (17.6% vs 4.2 OR: 4.3; 95% CI: 3.4 to 5.4 p=0.001). Cardiac mortality and MACE were also higher in patients with CTO (14.7% vs 3.7% OR: 4.42; 95% confidence interval [CI]: 3.18 to 6.15; p <0.0001 and 33.5% vs 20.4% OR: 1.97; 95% confidence interval [CI]: 1.56 to 2.47; p <0.0001 respectively).
Conclusions: Coronary chronic total occlusion in the non-culprit artery in patients presenting with STEMI is associated with poor long-term mortality.

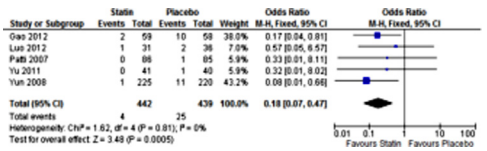


TCT-849

Pre-Treatment With High Dose Statin Decreases Cardiovascular Events In Unstable Patients Undergoing Percutaneous Coronary Intervention: A Meta-Analysis Of Randomized Controlled Trials

Georges EL-Hayek[1], Alexandre M. Benjo[2], Eyal Herzog[3], Emad Aziz[4], Jacqueline E. Tamis-Holland[5]
[1]St Luke's Roosevelt Hospital Center, New York, NY, [2]Columbia University Division of Cardiology, at the St.Lukes-Roosevelt Hospital Center, New York, NY, [3]Columbia University College of Physicians - St.Lukes-Roosevelt Hospital Center, new york, NY, [4]Columbia College of Physicians- St Luke's Hospital, New York, NY, [5]St Luke's -Roosevelt Hospital Center, New York, NY

Background: Statin loading prior to percutaneous coronary intervention (PCI) has been shown to decrease peri-procedural myocardial infarction but less is known regarding the clinical benefit of pre-procedural statin loading. We aimed to investigate this hypothesis in stable patients and among patients with Non ST elevation acute coronary syndromes(NSTE-ACS).
Methods: We performed a PubMed and Scopus databases search from 1966 through March 2013 of trials of stable patients and patients with NSTE-ACS treated with high dose statins prior to PCI. We evaluated the incidence of major cardiac events including death, spontaneous MI, target vessel revascularization and stent thrombosis. We used fixed effect analysis when the I2 was up to 40% and the P at least 0.10, otherwise we used random effect.
Results: Out of 1188 articles, 15 randomized controlled trials were included in this meta-analysis. Among 3529 patients, 1783 patients were randomized to a loading dose of statin pre PCI and 1746 patients were given statin therapy initiated only after the PCI. There was a 43% reduction in clinical events in followup in the group of patients treated with pre-procedural statin loading, (OR: 0.57, 95%, 0.37-0.89, p=0.01) When stratified according to clinical presentation, this result was only significant for those patients with NSTE-ACS, (OR: 0.18, 95% CI 0.07-0.47, p=0.0005) (figure) and was not noted in the group of patients who underwent PCI for stable angina (OR: 1.0, 95% CI 0.58-1.72, p=NS)
Conclusions: Pre-treatment with high dose statins prior to PCI in patients with NSTE-ACS is associated with a major reduction in clinical events.



TCT-850

Intravascular Ultrasound-Guided Versus Angiography-Guided Drug-Eluting Stent Implantation: Meta-analysis of 3 Randomized Trials and 14 Observational Studies Involving 26,503 Patients

Jung-Min Ahn[1], Young-Rak Cho[2], Soo-Jin Kang[1], Young-Hak Kim[2], Won-Jang Kim[1], Cheol Whan Lee[1], Seung-Whan Lee[1], Jong-Young Lee[1], Seong-Wook Park[1], Duk-Woo Park[1], Hyo In Choi[1], Hanul Choi[2], Hyun Kuk Kim[1], Pil Hyung Lee[1], Jae Hyung Roh[1], Seung-Jung Park[1]
[1]Asan Medical Center, Seoul, Korea, Republic of, [2]Asan medical center, Seoul, Korea, Republic of

Methods: An unadjusted random-effects meta-analysis was performed in 3 randomized and 14 observational studies involving 26,503 patients.
Results: IVUS-guided PCI was significantly associated with a longer and bigger stent implantation and a larger post procedure angiographic minimum lumen diameter (MLD). The mean difference was 0.18 mm (95% confidence interval [CI] 0.06 to 0.29, P=0.003), 0.29 mm (95% CI 0.20 to 0.39, P<0.001), 0.33 mm (95% CI 0.25 to 0.50, P<0.001) for stent length, stent diameter, and MLD, respectively. Regarding the clinical outcomes, IVUS-guided PCI was associated with a significantly lower risk of major adverse cardiac events (MACE) (odds ratio [OR] 0.79, 95% CI 0.67 to 0.94, P=0.007), death (OR 0.65, 95% CI 0.52 to 0.82, P<0.001), myocardial infarction (OR 0.55, 95% CI 0.40 to 0.74, P<0.001), repeat revascularization (OR 0.84, 95% CI 0.71 to 0.99, P=0.04), and stent thrombosis (OR 0.59, 95% CI 0.45 to 0.78, P<0.001).
Conclusions: IVUS-guided PCI was associated with lower risks of adverse clinical outcomes including the reduction of MACE, death, myocardial infarction, repeat revascularization, and stent thrombosis. This meta-analysis may encourage the use of IVUS for PCI in patients undergoing DES implantation.

TCT-851

Outcomes with first- vs. second- generation drug-eluting stents in coronary chronic total occlusions (CTOs): systematic review and meta-analysis

Viswanatha Lanka[1], Vishal G. Patel[1], Bilal Saeed[2], Bavana Rangan[3], Shuaib Abdullah[1], Jerrold Grodin[1], Subhash Banerjee[1], Emmanouil Brilakis[1]
[1]VA North Texas Healthcare System and UT Southwestern Medical Center, Dallas, TX, [2]Geisinger Medical Center, Danville, PA, [3]VA North Texas Healthcare System and UT Southwestern Medical School, Dallas, TX

Background: To perform a systematic review and meta-analysis of studies reporting outcomes after first- and second- generation drug-eluting stent (DES) implantation in chronic total occlusions (CTOs).
Methods: As of May 2013, 31 published studies reported outcomes after DES implantation in CTOs: 13 uncontrolled studies (3161 patients), 3 randomized (220 patients) and 10 non-randomized (2150 patients) comparative studies with bare-metal stents (BMS), and 2 non-randomized (685 patients) and 3 randomized (489 patients) comparative studies between first and second generation DES. Data were pooled using random-effects meta-analysis models.